SAN FRANCISCO'S BUILDING DECARBONIZATION ROADMAP

Pathway to Zero Emission Buildings

San Francisco Department of Environment
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SF Environment
Our home. Our city. Our planet.
A Department of the City and County of San Francisco

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Introduction

Replacing fossil fuels in our residential, commercial, and municipal buildings with clean electricity is a crucial step to building resilient housing, protecting public health, and eliminating greenhouse gas (GHG) pollution. Electrifying all buildings is a key part of San Francisco's Climate Action Plan (CAP) to achieve net-zero emissions by 2040. This roadmap documents the focus areas, strategies, and actions to accelerate progress towards building decarbonization and achieve this goal.

In San Francisco, building electrification means replacing natural gas appliances for space heating and cooling, water heating, cooking and clothes drying in buildings with efficient and electric appliances to create zero emission buildings. The benefits of zero emission buildings include:

Health: All-electric buildings improve indoor air quality and health by eliminating natural gas combustion inside homes. Burning gas in household appliances produces harmful air pollution which increases rates of respiratory disease, including asthma.

Safety and Resilience: Reducing reliance on the gas system improves resilience by reducing fire risk and simplifying building systems and maintenance. Gas plumbing in buildings poses fire, explosion, and public safety risks. It is estimated after a 7.9 earthquake it could take six months to restore gas service citywide, while electricity can be restored in less than a week.

Climate Change: The energy use from buildings in San Francisco contributes to 41% of the citywide GHG pollution, and natural gas is responsible for 87% of the building GHG emissions. Natural gas is mostly methane, a greenhouse gas that is 86 times more potent than carbon dioxide, so not only the use of natural gas, but methane leaks also have a major impact on warming the planet.

Equity: For low-income communities and communities of color that spend a disproportionate amount of their income on energy, and who are more likely to suffer from asthma due to poor indoor air quality, efficient zero emission homes are an important opportunity to deliver social equity benefits.

Preparing for the Transition

Emissions from buildings in San Francisco have decreased more than 50% since 1990, due part to the success of energy efficiency incentive programs; strong green building codes that improve energy and water efficiency in new construction and alterations; citywide access to renewable electricity; and acquiring experience and data from developing and implementing policies that have required energy performance disclosure and energy audits.

Selected key actions:

2002: **Energy Rebate Programs launched.** For two decades, the City has partnered with utilities (and more recently BayREN) to deliver incentives and technical assistance with energy improvements – prioritizing multifamily housing and small & hard to reach businesses.

2008: **San Francisco Green Building Code adopted**, extending the City's requirements for efficiency and sustainability to all new construction and major alterations. Updated regularly, the Green Building Code requires solar PV, solar thermal, or living roofs; wiring for electric vehicle charging; and efficiency requirements stricter than California's nation-leading energy standards.

2011: **Existing Buildings Ordinance adopted**, requiring energy benchmarking and publicly disclosure of energy use annually. Commercial buildings are required to regularly have an engineer identify options to improve energy efficiency. San Francisco was an early leader, and today more than 40 US cities, counties and states require energy benchmarking.

2016: **CleanPowerSF launched;** the Supergreen product offers 100% renewable energy to any subscriber.

2019–2020: **Zero Emission Buildings Taskforce** (ZEBTF) advises how San Francisco can best realize the Mayor's commitment, including how, where, and what support is necessary to an equitable, inclusive, just transition to healthy, resilient, and fossil-free buildings.

2020: **All-Electric New Construction Ordinance** adopted – informed by the recommendations of the ZEBTF and evidence that all-electric construction benefits affordability, public health, and resilience.

2021: **San Francisco Climate Action Plan** is developed via a data-driven, inclusive process. The plan offers strategies to meet emissions goals and advance racial equity, public health, economic recovery, and resilience.

The programs and policies in place in San Francisco are the prerequisites to advance an effective, equitable approach to accelerating efficient emissions reduction in existing buildings.

Goals

San Francisco, like cities around the world, is faced with the threat of a climate emergency, coupled with long-standing challenges of economic inequality and racial injustice. The most recent Intergovernmental Panel on Climate Change (IPCC) report, released in August 2021, indicates that the window to act is quickly closing. The most important thing to limit the worst impacts of climate change is to rapidly reduce emissions, especially carbon dioxide and methane. In response to these threats, Mayor London Breed sponsored legislation that was adopted by the San Francisco Board of Supervisors in July 2021 that set new, ambitious climate goals for the City:

1. By 2030, reduce sector-based emissions 61% below 1990 levels, and
2. By 2040, achieve net-zero sector-based emissions (90% reduction from 1990 levels)

As shown in the 2019 citywide GHG inventory, building operations account for 41% of total emissions, of which 87% come from the burning of natural gas. Key Climate Action Plan sector goals related to Building Decarbonization include:

- Energy Supply: By 2025, supplying 100% renewable electricity, and by 2040, utilizing 100% renewable energy
- Buildings: By 2021, requiring zero onsite fossil fuel emissions from all new buildings, and by 2035, requiring zero onsite fossil fuel emissions from all large existing commercial buildings.

San Francisco's approach to reaching net-zero emissions is first and foremost grounded in equity. The most significant consequences of climate change will be felt by Black, Indigenous, and People of Color (BIPOC) communities, people with disabilities, and other vulnerable populations. Strategies to eliminate emissions from building operations include specific recommendations to ensure an equitable transition to efficient, all-electric buildings. Critical issues that must be addressed in future implementation include protecting tenants from displacement by landlords, mitigating against unfair cost burdens, expanding building decarbonization job opportunities for disadvantaged workers, and very importantly, providing a wide range of financial support for low-income building owners.

Principles

Reducing building emissions offers a unique opportunity to advance other key City priorities: protecting public health; strengthening resilience to natural and industrial hazards and shocks; creating a more fair and inclusive economy; and importantly, directly addressing racial inequities and the marginalization of whole groups of people. San Francisco views climate action through four complementary principles, or "lenses", which have identified critical issues and shaped proposed strategies for future implementation.

CAP Lens 1: Racial and Social Equity

When data is analyzed by race, the results of discriminatory policies are evident across every social indicator, including unemployment, health, household income, education, housing, and many others. Climate change will only exacerbate these disparities, so climate strategies, including those for the building sector, must be intentionally designed to mitigate and reverse these outcomes for BIPOC communities.

CAP Lens 2: Economic Recovery and Just Transition

A just transition calls for a strategic, people-focused approach to phasing out polluting industries while creating employment pathways for workers in those industries, plus a new generation of workers, to transition to quality jobs that support economic and climate justice. BIPOC and low-income workers must be availed of these opportunities.

CAP Lens 3: Protecting Public Health

Climate change threatens human health in a multitude of ways; building electrification actively helps to mitigate these effects. For example, decarbonization reduces exposure to natural gas pollution, which contributes to respiratory illnesses like asthma. And since heat pumps provide both heating and cooling, they can protect residents from increasing temperatures, especially our most vulnerable citizens.

CAP Lens 4: Resilience

While working to eliminate emissions over the next 20 years, San Francisco must also prepare for unavoidable impacts of climate change. In the building sector, decarbonization must consider and find synergies to support community resilience outcomes such as grid reliability, protecting against hotter temperatures, and improving indoor and outdoor air quality.

Focus Areas and Implementation

This decarbonization roadmap details a wide range of strategies and actions for fully electrifying San Francisco's building stock. Each strategy and action falls under one of seven focus areas:

New Construction: With the ban on natural gas in new construction firmly in place, the City is pivoting towards connecting developers with technical support, documenting case studies, and ensuring major alterations are decarbonized. Key Collaborators: Department of Building Inspection, Planning Department.

Municipal Sector: City departments have the opportunity and obligation to lead by example. Using municipal buildings as a testing bed for new policies and technologies, along with establishing meaningful connections between the public and private sectors, has the potential to scale beyond the relatively small footprint of the City's portfolio. Key Collaborator: Municipal Green Building Task Force.

Residential Sector: Every resident in San Francisco has a role to play when it comes to building resilience and eliminating emissions. Increasing engagement and participation from more people will be crucial to making progress. Key Collaborators: CleanPowerSF, BayREN.

Commercial Sector: It will be important to consider together the policies, education, and resources for this sector, and consider that large commercial buildings are on an accelerated schedule to decarbonize by 2035. Key Collaborators: Subject matter experts, large portfolio holders, industry groups.

Workforce Development: Building decarbonization can create well-paid jobs for installers trained to build and maintain efficient and all-electric buildings. Just Transition principles, which prioritize opportunities for those leaving carbon intensive industries and for disadvantaged workers seeking employment in the low-carbon economy, must guide workforce policies, programs, and investments. Key Collaborator: Office of Economic and Workforce Development.

Tenant Protections: Robust tenant protection policies and leasing strategies must be in place to prevent displacement for residents and businesses. Funding support and financial incentives must grow rapidly to fuel increased demand for retrofits. New education resources will be critical to inform owners and tenants about the many benefits of zero-emission buildings. Key Collaborators: Rent Board, Community-based organizations.

Measurement or Performance Tracking: The Climate Action Plan (CAP) is data-driven, with measurable outcomes. The City will create and share a robust monitoring, evaluation, and reporting system that enables stakeholders to track key metrics and understand progress toward targets and goals. Key Collaborators: Department of Technology, Planning Department, Department of Building Inspection, Office of Labor Standards.

In this roadmap, under each focus area there are the CAP's strategies, support actions and the expected phases of implementation. The expected phases of implementation will be detailed in forthcoming delivery plans. The delivery plans will round out the actions to include tasks and milestone deliverables. The delivery plan will set expectations for progress, track resources, and flag areas where support is needed. Milestones are grouped into five categories which are displayed under the focus areas in this report:

- **Planning and research:** Capacity assessment to understand if funds, staff, skills, and other resources are available to implement the actions. Compile, create, and publish statistics, precedents, case studies, and other information to increase awareness and guide appropriate next steps.

- **Coalition building and stakeholder engagement**: Learn the priorities, challenges, and assets available and share knowledge toward meaningful advancements.

- **Developing and passing policies and regulations:** Signal a need for improvement to business-as-usual practices and new legislation or regulations are needed.

- **Implementation and support:** Actualize ideas and provide assistance to others for outsized outcomes.

- **Performance management and metric tracking:** Develop a feedback loop with regular opportunities for refinements or course corrections as necessary.

All New Construction

In 2019, buildings were responsible for 41% of citywide emissions, and 87% of emissions from buildings stemmed from burning natural gas. Eliminating carbon emissions will require that no new buildings are constructed or renovated with fossil fuels. Two overarching strategies apply across all new building stock:

			Delivery Plan Components				
Strategy Number & Description	Action Number & Description	Start Date	Planning & Research	Coalition Building & Stakeholder Engagement	Developing & Passing Policy	Implementation & Support	Performance Management & Metric Tracking
BO.1 Eliminate fossil fuel use in new construction	BO.1-1 By 2021, require newly constructed buildings to be efficient and all-electric with no on-site carbon emissions.	Complete					
	BO.1-2 By 2023, require major alterations to be efficient and all-electric with no on-site carbon emissions.	2022					
BO.4 Transition to low-global warming potential refrigerants.	BO.4-2 Support the adoption of more stringent state and federal regulations to reduce refrigerant GWP	2022					

 = Denotes necessary component of the delivery plan to implement the action with sufficient quality to produce the measurable outcomes documented in the Climate Action Plan.

Municipal Sector

Emissions from Municipal Buildings totaled 133,743 CO2e (2019) and while this is only a small fraction of San Francisco's building emissions, government can lead by example to eliminate GHG emissions from their own buildings. Electrification of public sector buildings supports economic development and sends a signal to the marketplace. In January 2020, San Francisco passed its first electrification ordinance, requiring new construction and major renovations of municipal buildings to exclude natural gas and include exclusively all-electric energy sources. The Climate Action Plan (CAP) builds on this requirement to expand expectations for existing building stock. Four actions in the CAP are particularly relevant for the City to be successful in transitioning our own portfolio to be efficient and all-electric:

			Delivery Plan Components				
Strategy Number & Description	Action Number & Description	Start Date	Planning & Research	Coalition Building & Stakeholder Engagement	Developing & Passing Policy	Implementation & Support	Performance Management & Metric Tracking
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-5a By 2022, update Chapter 7 of the Environmental Code to provide a pathway for all existing municipal buildings to be efficient and all-electric.	2021					
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	By 2024, ensure the City's Capital Plan is updated to reflect the need to replace gas fueled equipment, in alignment with the City's 2040 net-zero goal.	2022					
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2 -6 SFO will a) evaluate an efficient, all-electric Terminal Central Utility Plant that would reduce total direct (Scope 1) airport emissions by	2022					

	approximately 80% by 2030, and b) prioritize all-electric equipment replacements throughout campus buildings, including terminal and non-terminal spaces that are occupied by tenants and the Airport Commission						
BO.4 Transition to low-global warming potential refrigerants.	BO.4-3 By 2023, support City departments' transition away from high-GWP refrigerants, by providing guidelines and specifications for future purchases of products containing refrigerants.	2022					

Residential Sector

Emissions from residential buildings totaled 1.05 million mtCO2e, comprising 23% of San Francisco's emissions (2019). The transition for existing residential buildings to efficient and all-electric will be challenging and will require inclusive engagement with a broad spectrum of stakeholders to co-create and deliver the necessary suite of policies, education, and funding support for an equitable transition. Yet, this effort will deliver important benefits to the whole community. For example, electrification reduces exposure to pollutants from burning natural gas, which contribute to respiratory illnesses, including asthma. And, heat pumps can provide both heating and cooling, which can protect residents from extreme temperatures, which is especially important for older adults and populations with pre-existing health conditions. The CAP includes five critical actions for a comprehensive approach:

			Delivery Plan Components				
Strategy Number & Description	Action Number & Description	Start Date	Planning & Research	Coalition Building & Stakeholder Engagement	Developing & Passing Policy	Implementation & Support	Performance Management & Metric Tracking
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-2 By 2023, develop a time-of-replacement policy that phases in requirements that all newly installed residential and other small building equipment be efficient and all-electric. The policy should customize requirements for simple equipment replacements to full renovations.	2022					
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-10 By 2024, pass a residential time-of-sale policy that requires an electrification plan, prioritizing water and space heating, indoor air quality, electric safety, how to access emergency response information, and recording of	2023					

	the presence or absence of gas service for each property.						
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-11 By 2024, develop and implement prescriptive criteria and permit & inspection processes for residential heat pump water heaters to be installed with a single integrated permit.	2023					
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2.12 - Explore the creation of a revolving decarbonization fund by developing a virtual power plant (VPP) or other district scale solutions that monetizes the benefits derived from energy efficiency, demand response, and energy storage systems.	2022					
BO.3 Expand the building decarbonization workforce, with targeted support for disadvantaged workers.	BO.3.2 - Partner with affordable housing providers, equipment vendors, subject matter experts, utilities and CleanPowerSF, CBO's and others to create a Climate Equity Hub to connect building owners and other customers with high-road service providers and installers, rebates and financing, and case studies	2022					

Commercial Sector

Emissions from the Commercial Sector totaled 831,000 mtCO2e in 2019 accounting for 18% of San Francisco's emissions. This includes commercial and industrial, direct access, direct and stream loop customers. San Francisco has seen the largest decrease in emission from the Commercial sector - a 67% decline since 1990. The decarbonization of existing large commercial buildings presents complex technical and financial considerations. Building Performance Standards (BPS) are an emerging policy option to achieve energy savings and emission reduction goals by requiring performance improvement milestones and regular reporting. Combining of firm date-certain requirements with reasonable time to act can empower leaders to plan and act when it is advantageous - in advance of deadlines. Providing a clear 'signal' of what is inevitable and reasonable flexibility can simplify enforcement.

			Delivery Plan Components				
Strategy Number & Description	Action Number & Description	Start Date	Planning & Research	Coalition Building & Stakeholder Engagement	Developing & Passing Policy	Implementation & Support	Performance Management & Metric Tracking
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-2 By 2023, develop a time-of-replacement policy that phases in requirements that all newly installed small building equipment be efficient and all-electric. The policy should customize requirements for simple equipment replacements to full renovations.	2022					
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-7 By 2024, Adopt a building performance policy requiring large commercial buildings to: a) completely transition to efficient and all electric equipment no later than 2035 b) in 2025, begin regular disclosure of progress toward goal	2023					

	c) allow payment of annual fees in lieu of electrification, which must be invested into decarbonization of low-income and affordable housing						
BO.4 Transition to low-global warming potential refrigerants.	By 2023, publish guidelines for refrigerant management best practices for selection of lowest-GWP refrigerants in new and replacement equipment, and collection and recovery of refrigerants from existing equipment to enhance compliance with state regulations	2022					

Workforce Development

Building decarbonization can create well-paid jobs for installers trained to build and maintain efficient and all-electric buildings. Just Transition principles, which prioritize opportunities for those leaving carbon-intensive industries and for disadvantaged workers seeking employment in the low-carbon economy, must guide workforce policies, programs, and investments. A just transition calls for a strategic, people focused approach to phasing out polluting industries while creating employment pathways for workers in those industries, plus a new generation of workers, to transition to quality jobs that support economic and climate justice. Specific actions have been identified in the CAP to support these goals.

			Workplan Components				
Strategy Number & Description	Action Number & Description	Start Date	Planning & Research	Coalition Building & Stakeholder Engagement	Developing & Passing Policy	Implementation & Support	Performance Management & Metric Tracking
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-9 By 2023 begin offering targeted technical assistance for BIPOC and low-income owners and tenants including information about incentives, rebates, and public and private financing options	2022					
BO.3 Expand the building decarbonization workforce, with targeted support for disadvantaged workers.	BO.3-1 Partner with workforce development entities, labor unions, and apprenticeship programs to align with and disseminate regional and statewide building electrification training, funding and project financing opportunities, prioritizing those	2023					

	transitioning from fossil-fuel dependent trades.						
BO.3 Expand the building decarbonization workforce, with targeted support for disadvantaged workers.	BO.3-3 By 2023, define goals and create policies for professional and workforce development building upon CityBuild Pro to ensure equitable access to building decarbonization jobs for BIPOC and low-income communities, from design to installation to business operations.	2022					
BO.3 Expand the building decarbonization workforce, with targeted support for disadvantaged workers.	BO.3-4 By 2025, create a Public-Private facilities managers and building operators roundtable to support peer-to-peer learning on fuel switching.	2024					

Tenant Protections

Building decarbonization solutions must consider the city's diverse building stock, deferred maintenance, and substandard electrical connections, while also acknowledging that approximately two thirds of San Francisco residents are renters who will need protections. Without careful planning, building decarbonization measures have the potential to increase tenant displacement and harassment, increase tenants' rents and energy bills, and disproportionately impact BIPOC and low-income renters. Robust tenant protections must be in place to ensure building decarbonization can improve renters' lives by lowering their energy burdens, protecting them from rent increases and displacement, eliminating the harmful health impacts of indoor air pollution from natural gas appliances, providing better resiliency to extreme weather, and improving comfort in the home.

			Workplan Components				
Strategy Number & Description	Action Number & Description	Start Date	Planning & Research	Coalition Building & Stakeholder Engagement	Developing & Passing Policy	Implementation & Support	Performance Management & Metric Tracking
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-8 By 2023, develop and adopt tenant protection and anti-displacement policies for renters in buildings transitioning to efficient and all electric systems.	2023					

Measurement and Performance Tracking

San Francisco conducts annual sector-level inventories to report against emissions reduction targets, but more refined data analysis will be necessary to understand the impact of forthcoming policies. Eliminating carbon emissions in San Francisco by 2040 will require replacing fossil fuel use in all buildings citywide with efficient electric systems. Comprehensive replacement requires more granular tracking to be transparent whether milestones are met; to identify which sectors are on track and where help is needed; to empower decisions by owners, tenants, officials, and utilities; and to enable systematic progress toward zero emissions. San Francisco building stock contains a finite number of fossil fuel-dependent devices; tracking is essential to systematic date-certain replacement.

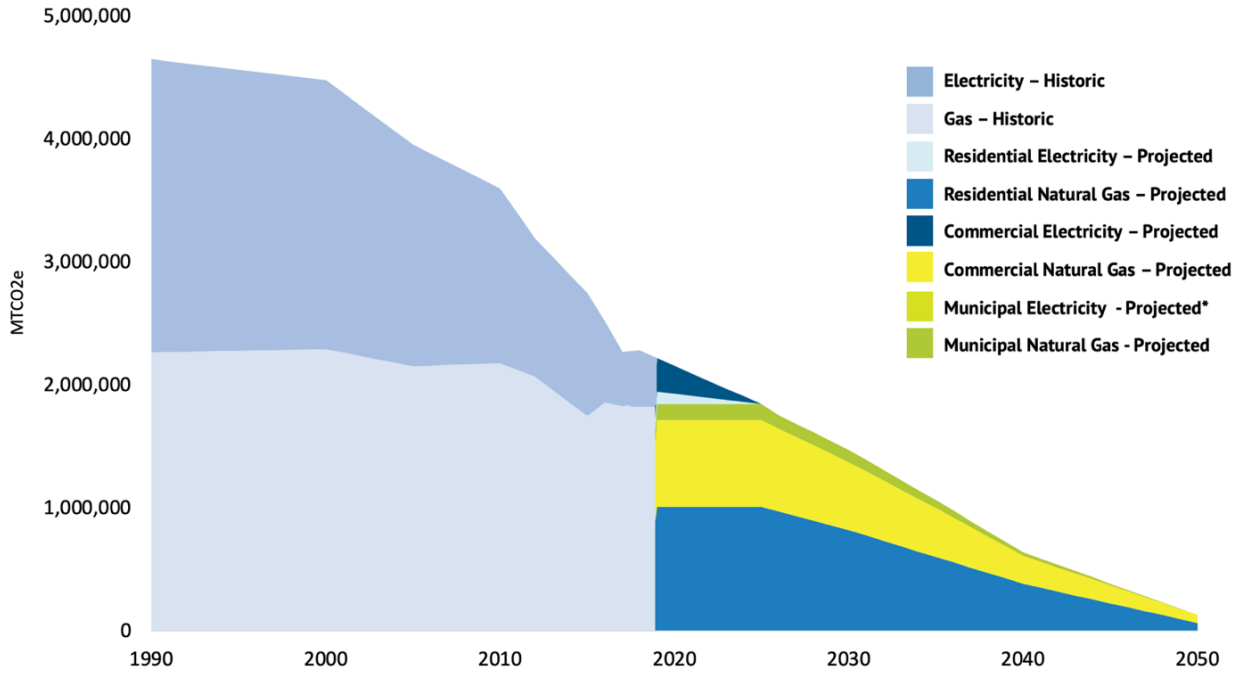
			Workplan Components				
Strategy Number & Description	Action Number & Description	Start Date	Planning & Research	Coalition Building & Stakeholder Engagement	Developing & Passing Policy	Implementation & Support	Performance Management & Metric Tracking
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-1 By 2023, develop a system to monitor the replacement rate of existing private sector natural gas-fueled equipment with all-electric. Annually report to BOS whether fossil-fuel using equipment is being switched at a rate sufficient to meet climate goals, including access to electrification by BIPOC and low-income communities.	2022					
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different	BO.2-3 By 2024, begin recording decarbonization status for each property at time of sale and permit review to ensure compliance	2023					

building ownership systems, and use types	with time of replacement policy						
BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership systems, and use types	BO.2-4 By 2023, perform an inventory of natural gas fueled equipment in municipal buildings.	2022					

Impacts

Transparency is the heart of this roadmap – essential to facilitating local leadership in each sector, helping those who need it most, and informing when targets are met, and guiding iteration in implementation. The actions in this roadmap are the basis for the projections in the 2021 Climate Action Plan to realize net zero emissions from buildings and also have the opportunity to deliver $232M in reduced utility costs, $38M in reduced social costs, and add 2,080 to 2,900 full-time 30-year careers. The actions presented in this roadmap are foundational and projected emission reductions are rooted in available technology; acceleration may be possible by building upon the successful implementation of this roadmap with additional funding and resources.

Projected Carbon Emissions from Buildings



** Municipal electric emissions are too low to be visible at this scale.*

Next Steps

To meet the ambitious goals of San Francisco's Climate Action Plan, this roadmap recapitulates the pathways and implementation plans to decarbonize the City's building stock. Additionally, the roadmap is intended to send market signals to the real estate, finance, labor, manufacturing, and construction sectors that San Francisco's climate goals must be accomplished within the lifespan of today's existing buildings. The strategies and actions in this report tee up the key questions of "when' and "how' to decarbonize and not "will we". That is not to say the path ahead will be easy. The electrification of San Francisco's building stock is an immense and complicated undertaking that must be done in an equitable manner to ensure everyone can benefit from the opportunities of climate action.

Next steps will focus on the development in three main areas; the **development of delivery plans**; additional **technical analysis**; and **funding**.

Development of delivery plans – Project teams led by department staff for each action, or cluster of related actions will develop deliver plans. The delivery plans will map out the steps needed for research and planning; coalition building and stakeholder engagement; developing and passing policies and regulations; and implementation and support. Additionally, performance management and metric tracking will be a key component as each delivery plan will develop indicators (i.e., metrics to track success, including data owner and frequency of calculation) and establish a trajectory for desired outcomes by setting quarterly targets. This level of documentation provides the communication elements necessary for timely results and to ensure transparency and accountability to the public.

Technical analysis – Additional technical analysis is needed to analyze critical building decarbonization barriers and model various solutions sets tailored to specific building typologies. For example, in the residential sector, many communities, particularly low-income communities, will not be able to retrofit their buildings without assistance. Targeted rebates and incentives will be needed, or else affordability will limit the City's decarbonization successes. To understand the appropriate package of incentives/rebates, modeling is needed to analyze the costs per building typology, and how that interacts with demographics and economic data. That will help support policies and formulate a rightsized incentive/rebate package.

Funding - To achieve the strategies and action detailed in this roadmap, millions, if not billions of dollars, will ultimately be required. Clearly, investment levels must be strategically increased far beyond just leveraging existing sources of funding and must identify new sources of revenue. The San Francisco Board of Supervisors has allocated funding for a year-long investigation into the options available to support the City's climate action strategies. The process will tap into the world-class expertise of local universities, think-tanks, labor organizations, and community groups. City departments and other key stakeholders, financial advisors, legal and policy experts will collaborate to research, analyze reliable financing models, and identify funding options. Each option will be evaluated to determine who benefits and who might be negatively impacted to ensure that funding solutions are equitable and do not impose a financial burden on communities that are already on the front lines of the climate emergency. The outcome of this analysis will be a white paper with an assessment of each option, a prioritized list of the most successful options for San Francisco and a detailed delivery plan.